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Docket No.: 5000-0169PUS1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Jordi TORMO I BLASCO et al.

Application No.: 10/579,140

Confirmation No.: 6377

Filed: May 15, 2006

Art Unit: 1614

For: FUNGICIDAL MIXTURES BASED ON A
TRIAZOLOPYRIMIDINE DERIVATIVE AND
A CONAZOLE

Examiner: Not Yet Assigned

LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Subsequent to the filing of the above-identified application on May 15, 2006, attached hereto is

- Form PCT/IB/338 (Notification of Transmittal of Copies of Translation of the International Preliminary Report on Patentability (1 pg)
- Form PCT/IB/373 (International Preliminary Report on Patentability (IPRP)
(1 pg)
- Form PCT/ISA/237 (Written Opinion of the International Searching Authority)
(9 pgs)

Applicant requests that these forms be made of record in the present application.

Application No.: 10/579,140

Docket No.: 5000-0169PUS1

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Dated: October 18, 2006

Respectfully submitted,

By 

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Attachment(s):

PCT/IB/338 - 1 pg

PCT/IB/373 - 1 pg

PCT/ISA/237 - 9 pgs

PATENT COOPERATION TREATY

PCT/EP2004/013068

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF TRANSMITTAL
OF COPIES OF TRANSLATION
OF THE INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY
(CHAPTER I OR CHAPTER II
OF THE PATENT COOPERATION TREATY)
(PCT Rules 44bis.3(c) and 72.2)

Global Intellectual Property

12. Sep. 2006

BASF AKTIENGESELLSCHAFT
67056 Ludwigshafen
ALLEMAGNE

1. AST
2. REF

EC - Pe 02
ID - Noelhard
NZ - Gohlweis
US - Ried
BR - Koptan
OAPI - Hahn

Date of mailing (day/month/year) 08 September 2006 (08.09.2006)	
Applicant's or agent's file reference 0000055102	IMPORTANT NOTIFICATION
International application No. PCT/EP2004/013068	International filing date (day/month/year) 18 November 2004 (18.11.2004)
Applicant BASF AKTIENGESELLSCHAFT et al	

EL: Phase beendet 15.05.2006

1. Transmittal of the translation to the applicant.



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

2. Transmittal of the copy of the translation to the designated or elected Offices.

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Yolaine Cussac
Facsimile No. +41 22 338 82 70	Facsimile No. +41 22 338 82 70

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 0000055102	FOR FURTHER ACTION	See item 4 below
International application No. PCT/EP2004/013068	International filing date (<i>day/month/year</i>) 18 November 2004 (18.11.2004)	Priority date (<i>day/month/year</i>) 27 November 2003 (27.11.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant BASF AKTIENGESELLSCHAFT		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a).																								
2.	This REPORT consists of a total of 10 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 80%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																							
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 29 August 2006 (29.08.2006)
Facsimile No. +41 22 338 82 70	Authorized officer <div style="text-align: center; font-weight: bold;">Yolaine Cussac</div> e-mail: pt11@wipo.int

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

TRANSLATION
PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing **See form PCT/ISA/210**
(day/month/year)

Applicant's or agent's file reference
0000055102

FOR FURTHER ACTION
See paragraph 2 below

International application No. PCT/EP2004/013068	International filing date (day/month/year) 18.11.2004	Priority date (day/month/year) 27.11.2003
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International Patent Classification (IPC) or both national classification and IPC
A01N43/90

Applicant
BASF AKTIENGESELLSCHAFT

1. This opinion contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the opinion |
| <input checked="" type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP	Authorized officer
Facsimile No.	Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/EP2004/013068

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

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Box No. II

Priority

1. ☒ The following document has not yet been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date in the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability:
citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-10</u>	YES
	Claims _____	NO
Inventive step (IS)	Claims <u>1-10</u>	YES
	Claims _____	NO
Industrial applicability (IA)	Claims <u>1-10</u>	YES
	Claims _____	NO

2. Citations and explanations:

The present report refers to the following citations (D1-D6):

D1: EP 0 988 790 A

D2: WO 98/46607 A

D3: EP 0 071 792 A

D4: EP 0 511 167 A

D5: EP 0 253 714 A

D6: LATIJNHOUWERS MAITA ET AL: "Oomycetes and fungi:
Similar weaponry to attack plants." TRENDS IN
MICROBIOLOGY, Vol. 11, No. 10, October 2003 (2003-
10), pages 462-469, XP002316336, ISSN: 0966-842X

Novelty

The subject matter of claim 1-10 is novel (PCT Article 33(1) and (2)).

The subject matter of independent claim 1 is a fungicide mixture composed of a specific fungicide triazolopyrimidine (referred to hereinafter as TP1) and cyproconazoles in a synergistically effective amount. The other independent claims 4, 9, and 10 concern a method for controlling parasitic fungi from the class of the *Oomycetes* by means of such a mixture, seeds containing such mixture, and to the use of both

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

compounds for producing a means for controlling *Oomycetes*.

None of the documents cited disclose the specific mixture which is the subject matter of the present application.

D1 discloses (see the passages cited in the international search report) synergistic mixtures of triazolopyrimidines with other fungicides, also including conazole fungicides. An example of cyproconazole is provided (D1, example 36). TP1 is not specifically mentioned. The "azolopyrimidine C" used in the example (referred to hereinafter as TPc) is the 7-(1,1,1-trifluoroprop-2-ylamino)-analog of azolopyrimidine TP1. Alongside TPc, the following are also cited as preferred substances: "azolopyrimidine A" (referred to hereinafter as TPa), which is the 2-chloro-6-fluoro-phenyl analog of TP1, and "azolopyrimidine B" (referred to hereinafter as TPb) which is the 7-(2,2,2-trifluoroethylamino analog of TPa. TPa and TPc are the two comparative substances of "A" and "B" of the present application.

The synergistic mixtures with conazoles are tested on a number of parasitic fungi, such as types of the species *Blumeria*, *Botrytis*, *Septoria*, *Erysiphe* and *Puccinia*, however not on oomycetes. The effectiveness of the specific mixture of TPc and cyproconazole against *Blumeria graminis* on wheat are shown in an example.

D2 discloses (see the passages cited in the international search report) *inter alia* the compound TP1 and its effectiveness against herbicidal fungi such as *Uncinula necator* (powdery vine mildew, *Erysiphales*, *Ascomycetes*). In a comparative example, it is shown that TP1 is superior to TPa,

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citations and explanations supporting such statement

known also from D1, in controlling those fungi on grape vines. D2 also mentions the possibility of mixture with other fungicides and also cites cyproconazoles in an extensive list, however without providing examples of mixtures. Activity against oomycetes is not mentioned explicitly, however TP1 proves to be largely inactive against the oomycete *Phytophthora infestans* (see D2, pages 23-26).

D3 discloses (see the passages cited in the international search report) unsubstituted triazolo and imidazolopyrimidines on nitrogen at the 7-position, which are similar in structure to the azolopyrimidines disclosed in D1 and D2, and describes them as being particularly active against phycomycetes (algae fungi) such as *Plasmopara viticola* (downy vine mildew, *Peronosporales*, *Oomycetes*).

D4 discloses (see the passages cited in the international search report) synergistic mixtures of fungicides which block ergosterol synthesis, with dithiocarbamates for controlling downy mildew, such as downy vine mildew (*Plasmopara viticola*). A mixture of cyproconazoles and mancozeb is preferred.

D5 discloses (see the passages cited in the international search report) synergistic mixtures for controlling oomycetes which contain a fungicidal phenylamide, such as metalaxyl or benalaxyl, and an agent that blocks ergosterol synthesis, such as triadimefon.

Finally, D6 discusses (see the passages cited in the international search report) the relationship between real fungi and the oomycetes related to brown algae (phycomycetes) in taxonomical, morphological and physiological terms, and

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citations and explanations supporting such statement

refers to differences on the one hand and to ecological similarities on the other which probably result from a convergent evolutionary development.

Inventive step

The present application meets the requirements of PCT Article 33(1) in conjunction with PCT Article 33(3) because the subject matter of claims 1-10 involves an inventive step.

In light of the description and the closest prior art in citation D1 (or D4 or D5), the problem addressed by the present application can be considered that of providing (further) synergistic mixtures of triazolopyrimidines with other fungicides which are active against oomycetes.

The solution proposed is characterised by usage of the specific triazolopyrimidine TP1 in conjunction with cyproconazole.

The closest prior art of D1 teaches that triazolopyrimidines of a general formula, including TP1, may develop a synergistic effect with a number of other fungicides including cyproconazoles. The preferred TPa, TPb and TPc, which are the only fully specified substances, differ from TP1 in the substitution on nitrogen, the phenyl ring, or both. The examples show a synergistic increase in activity of the mixture of TPc with cyproconazole against ascomycetes such as *Blumeria graminis* (powdery mildew), an ascomycete on wheat.

D2 specifically discloses 2,4,6-trifluorophenyl triazolopyrimidine including TP1 (compound 2), and shows that they are quite effective against the ascomycetes *Botrytis*

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cinerea and *Uncinula necator* (powdery vine mildew) but not against the oomycete *Phytophthora infestans* (see D2, pages 23-26).

Cyproconazole is not known as being particularly effective against oomycetes, either. On the contrary, as an ergosterol synthesis blocker it ought to be inactive against oomycetes since the latter do not synthesis sterols (see D4, page 2, lines 1-17; D5, page 2, lines 3-17; and D6 also). To control them, the chosen means are rather dithiocarbamates such as mancozeb, and phenylamide fungicides, such as metalaxyl and benalaxyl, which surprisingly are able to develop a synergetic effect with ergosterol synthesis blockers against oomycetes (see D4 and D5).

To arrive at the subject matter of the application, it is necessary to select the triazolopyrimidine of the present application from those in D2, namely TP1, and use it together with cyproconazole, instead of the TPc stated in D1.

In view of the teachings of D1 and D2, this would be a conceivable alternative to the mixture from the examples in D1 that concern a means for controlling parasitic fungi of the class of ascomycetes; however, a person skilled in the art would not expect such mixtures to be very effective against parasitic organisms from the class of the oomycetes. This is confirmed also with regard to the mixture known from D1, as shown in a comparison of examples of use from the present application.

Proceeding from D4 or D5 a person skilled in the art would exchange the dithiocarbamates or phenylamides, known as

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citations and explanations supporting such statement

effective against oomycetes, for TP1, that, however, is not effective against *Phytophthora infestans* (Oomycetes) according to d2. Based on D5, a person skilled in the art would also have to exchange the triazoles cited therein that block ergosterol synthesis for cyprocoanzole. The prior art does not provide any reason for doing this, nor does it even suggest that this would lead to a solution of the problem addressed by the present invention.

Thus, the proven activity of the claimed mixtures against oomycetes is surprising and provides a convincing indication that an inventive step is involved.

Industrial applicability

The subject matter of claims 1-10 is considered industrially applicable (PCT Articles 33(1) and (4)).